side of measles as the commonest disease of childhood.

Ask the antivaccinationist what he would do to safeguard the public, and he says he would isolate those with the disease. That is just as effectual as the locking of the barn door after the horse is stolen. By the time a man knows he has smallpox he has generally been in contact with a great many people, most of whom would take the disease if they were not protected in some way. Isolation had its most thorough tryout in Germany where it failed in spite of the rigid supervision of the Prussian police. They then tried universal vaccination and revaccination with the result that smallpox disappeared completely from Germany at a time when it was raging in poorly vaccinated Austria and Russia.

Confronted by these facts the "anti" argues about the dangers of vaccination. Show him then such statistics as those of the U. S. Sanitary authorities who performed this operation on 3,515,000 Filipinos without a single death or any serious post-vaccinal infection.

The alleged Public School Protective League thinks smallpox is a disease of the past—outlawed by modern sanitation. It thinks compulsory vaccination is advocated by the doctor simply because there is a little money in it. If these people could only see a smallpox epidemic occasionally or could live for a while in an unvaccinated country, we would have no more trouble with them. Many years ago, when practicing in Mexico, it interested me very much to see the mental change which came over visiting Americans who had previously been hostile to vaccination. When they saw that most of the Mexicans were pock-marked; when they saw the ghastly effects produced by the young women who try to fill the depressions in their skins with powder and paint, when they saw the many blind beggars, and when they found the man sitting next to them at the bull-fight speckled with fresh lesions, they hurried to be vaccinated. Some were decent enough to admit that their former stand had been due to the fact that they did not know what a terrible disease smallpox is. They did not know how near it was to our doors and that we would all be pock-marked too if it were not for vaccination.

The Public School Protective Leaguer says to us now: "You are afraid of smallpox but you are sure that you can protect yourselves. We are not afraid and we are willing to accept the consequences. Go ahead and get vaccinated but leave us alone. Let us have freedom in this land." At first sight this argument sounds reasonable. Some cold-blooded individuals have even suggested that the best way to cure the Public School Protective Leaguer of his folly would be to let him and his children go unvaccinated. The experience of the last 100 years has shown that when the percentage of unvaccinated in a community rises to a certain point there always comes a terrible epidemic of smallpox. This epidemic would kill off about 40 per cent. of the unvaccinated and would leave the rest pock-marked or blind in one eye. The saddest thing is that the blow would fall most heavily on innocent children. We know also that many of those who have been vaccinated only once in childhood would take the disease (in a milder form) in such an epidemic. We see then that the individual has no more right to have smallpox than he has to burn down his city home. The state must object in both instances because the man cannot be sure of limiting the damage to himself and his family. Similarly, I cannot keep gasoline in my garage; I cannot drive on the left-hand side of the street and I cannot sell whisky or morphine. All of these prohibitions are infringements on my personal liberty, but I must put up with them because I might injure others if I were to have my way. For the same common weal the anti-vaccinationist and the Public School Protective Leaguer should be willing to deny himself and his children the pleasure of having smallpox.

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INFANT MORTALITY IN SAN FRANCISCO IN 1919.

By MISS HATTIE LEZYNSKY AND DR. ADELAIDE BROWN of the San Francisco Civic Center Public Health Committee.

The subject of infant mortality is the topic assigned me, and I am very fortunate to be able to present to you as the basis of this paper a discussion of the statistical work on infant mortality in San Francisco for the year 1919—done by Miss Hattie Lezynsky of the Public Health Committee of the San Francisco Civic Center, and Mrs. M. Blumlein and Mrs. R. Hoyle. This committee took for its subject a study of Infant Mortality based on race, type of obstetrical care, and five chief causes of infant death, as outlined by the Children's Bureau from the Federal census of 1910.

Study of Infant Mortality in the first two weeks of life under the headings:

1. Status of the family
   Foreign father and mother
2. Type of care { Midwives / Physician / Hospital care }
3. First child
   Second child
   Third and later

STUDY OF INFANT MORTALITY IN SAN FRANCISCO FOR 1919.

Tables I.
A, B & C.

AGE DISTRIBUTION NUMERICAL AND PERCENTAGE
Of Registered Deaths of Infants under 1 year of age.

A. TOTAL INCLUDING STILL BORN.

	Stillborn	1st week	2nd week	1 & 2	3rd & 4th Weeks	2nd thru 12th month	Totals
No.	354	183	36	219	35	238	846
%	41.84	21.63	4.26	25.89	4.14	28.13	100%

B. BORN ALIVE TO 1st YEAR OF AGE.

No.		183	36	219	35	238	492
%		37.2	7.3	44.51	7.11	48.37	99.99%

C. BORN ALIVE TO 1st MONTH OF AGE.

No.		183	36	219	35		254
%		72.05	14.1	86.2	12.8		100%

TABLE II.
SUMMARY IN ASCENDING PERCENTAGE OF DEATHS IN ASSEMBLY DISTRICTS.

		Stillborn	%	Born Alive	%	Total C	%	Remarks
Lowest	1st	31st Dist.	3.7	22 Dist.	4.3	31 Dist	4.1	
	2nd	22nd	4.2	31	4.8	22	4.3	
	3rd	24th	5.1	32	4.9	27	5.4	Dist. 26 leads in Still-born deaths
	4th	27th } Equal	(5.7	27	5.3	32	5.7	Dist. 33 leads in Born alive deaths & total
	5th	25th }	(5.7	21	6.3	21	6.1	Dist. 30 takes 2nd high-est pl. in Total
	6th	21st	5.9	29	6.6	24	6.3	Dist. 31 has fewest still-born deaths
	7th	32nd	6.8	26	6.9	25	6.5	Dist. 22 has fewest born alive & total deaths.
	8th	23rd	7.1	25	7.1	23	7.3	
	9th	28th	8.2	24	7.3	29	7.7	-------
	(10th	30th	8.8	(23 Equal	7.5	28	7.8	See Assembly Dist. Maps
	(11th	29th	9.3	(28	7.5	(26 Equal	(8.2	for boundaries of these
	12th	33rd	9.6	30	7.7	(30	(8.2	districts.
Highest	13th	26th	9.9	33	12.6	33	11.4	

STATISTICS.

4. Cause of the death
   a. Congenital defects
   b. Injuries at birth
   c. Toxemia of the mother, flu and eclampsia
   d. Syphilis
   e. {Prematurely born
      {Debility of child
5. Infant Mortality second and third weeks, same headings.
6. Infant Mortality second to twelfth month. Gastro-intestinal, respiratory, other causes.

The co-operation of the Board of Health and the excellent leadership of Miss Lezynsky made this study possible.

In San Francisco in 1919:

Total births.....8754
(Including still-births registered)

TABLE III. PARENTAGE
STILLBORN AND TO 1 MONTH OF AGE.

	Foreign Father For. Mother		Both For.	Total For.	Both Amer.	Undetermined	Total
A No.	26	16	122	164	172	18	354
Still-born %	7.34	4.52	34.46	46.32	48.59	5.08	100

B. BORN ALIVE WITHIN 1st & 2nd WEEKS OF AGE

No.	22	15	76	113	99	7	219
%	10.05	6.85	34.70	51.59	45.21	3.19	99.99

C. BORN ALIVE WITHIN 3 & 4 WEEKS OF AGE.

No.	3	5	11	19 54.29	15 42.86	1	35
%	8.57	14.29	31.43	1st Mo. 132 51.96	1st Mo. 114 44.88%	2.85	100

D. TOTALS WITHIN 1 MONTH OF AGE

No.	51 87	36	209	296	286	26	608
%	8.39	5.92	34.37	48.67	47.04	4.28	99.99

TABLE IV BIRTH ATTENDANCE
OF STILLBORN AND INFANTS LESS THAN 1 MONTH OF AGE

Age	Stillborn	1st&2nd Week	3rd&4th Week	Totals	Stillborn	1st&2nd	3rd&4th	Totals
Physician	133	67	16	216	37.57	30.59	45.71	35.53
Midwife*	19	17	6	42	5.37	7.76	17.14	6.91
Hospital	180	121	11	312	50.84	55.25	31.43	51.31
None	3	1	0	4	0.85	0.47	0.00	0.66
Undi-termined	19	13	2	34	5.37	5.93	5.71	5.59
Totals	354	219	35	608	100%	100%	99.99%	100%

* Midwives are divided between Italian and Japanese.

Deaths within one year of age..... 846
(Including registered still-births)
Registered still-births 354
Or an infant mortality of..... 96.6
Infant mortality per 1000 *living* births 58.5
(Excluding still-births registered)

Note: The U. S. Infant Mortality is 100 per 1000 living births; New Zealand is 50 per 1000 living births.

The following tables deal only with the infant mortality of 58.5 per 1000 registered living births —or a total of 492 deaths.

Age distribution (the analysis of the still-born cases is made also).

Table I–B. Born alive to first year of age.

These tables present dramatically the death rate of the first week of life: 72% of 254 babies living less than a month, live less than a week; 51% of the babies born alive—and dying under one year of age—die in the first month, 44% in the first week, and over the other ten months the remainder, 56%, die. When you add to these figures the 354 still-born and *registered,* and 254 babies born alive but dying within one month of birth, we have 63% of the total deaths occurring in the first year of life due to *prenatal, immediate postnatal,* and *vitality conditions.* This waste of human life is appalling and must mean to the parents—more intelligent eugenics; to the social worker—better chance for prenatal care for all women; and to the nurse and physician—a more

TABLE V

NUMBER OF CHILD STILLBORN AND INFANTS LESS 1 MONTH OF AGE

	Numerical distribution				Percentages			
Age	Stillborn	1 & 2nd Week	3 & 4 Week	Totals	Stillborn	1 & 2nd Week	3 & 4 Week	Totals
1st	151	83	13	247	42.66	37.89	37.14	40.62
2nd	66	48	4	118	18.64	21.92	11.43	19.41
3rd	32	23	5	60	9.04	10.50	14.29	9.87
4th & Over	76	44	11	131	21.47	20.09	31.42	21.55
Undetermined	29	21	2	52	8.19	9.59	5.71	8.55
Totals	354	219	35	608	100%	99.99	99.99	100%

Remarks - The greatest no. of deaths occurred with the 1st child, 40%
The next highest % was the 4th and later child, 21%

TABLE VI. 2 CAUSES OF DEATHS OF INFANTS BORN ALIVE

B. WITHIN 1st & 2nd WEEKS OF AGE.

	I Congenital Defects in infant	II Injuries at birth	III Toxemia in Mother	IV Syphilis	V Prematurity and debility	VI Other Causes	VII Unknown Cause	Total
No.	66	16	10	3	90	33	1	219
%	30.14	7.30+	4.57-	1.37-	41.10-	15.07+	0.45+	100.00

C. AGE 3rd & 4th WEEKS

No.	6	0	0	4	9	16	0	35
%	17.14	0.00	0.00	11.43-	25.71	45.71	0.00	99.99-

D. AGE 2 to 12 MONTHS

	Gastro-Intestinal	Respiratory	Other Causes	Unknown Causes	Total
No.	66	93	77	2	238
%	27.72 %	39.08 - %	32.35 %	0.84%	99.99 %

TABLE VI.

CAUSES OF DEATH

A. OF STILLBORN

I Congenital defect in infant	II Injuries at birth	III Toxemia in Mother	IV Syphilis	V Prematurity sometimes - age of foetus but without cause.	VI Full term no cause given	VII Stillborn no age or cause given	VIII Other Causes	Totals
27	31	35	2	96	10	150	3 2 exposures 1 abortion	354
7.63	8.76	9.88 *Flu & Edumpia	0.56	27.12	2.82	42.38	0.84	99.99%

critical study of each failure which adds to this list.

Localities of distribution of still-born and infant mortality during first year of life by Assembly districts:

Assembly district 33—the crowded Italian quarter—furnishes highest mortality of infants born alive, and second of still-born, and highest of total deaths—11.4% of the 846 deaths under discussion; *Assembly district 26,* the highest still-born, and drops to the seventh place in the thirteen districts on infant mortality under one year, furnishing 6.9% of these. *Assembly district 30* takes second place in highest mortality of infants born alive, 7.7%, and fourth highest on still-born furnish 8.8% of these. Assembly districts 30 and 33 have large foreign population and crowded quarters. In the first lies the ghetto, and in the other the Italian and Chinese quarters. *The 31st, a region* of good homes and high-grade care, furnishes still-born 2.7%, and born alive but dying under one year 4.8%, while the 22nd district, a district of very moderate means but individual dwellings, has 4.2% of still-born and 4.3% of those born alive but dying in first year.

Table 3. *Parentage—of infant mortality. Still-born* shows slightly larger percentage in full American parentage. *Death one to fourth week,* 6% less deaths in full American parentage; while the total deaths up to one month, including still-born, run—48.67% foreign parentage, 47.04% American.

Marriage—Table 3—shows that racial intermarriage is practically nil. Of 140 cases noted, only two interracial are recorded, 1 Mexican-English, 1 Swede-Chinese. The foreign intermarriages are national and of 140 cases only 8% are international or interracial. The 10 international are all but one inter-European.

Birth attendance of the infants dying still-born or in first month of life. Table 4.

Thirty-five per cent. were attended by physician, 6.91% by midwife, 51.31% were attended in hospitals; 50% of the still-born had hospital care, and 50% of infants born alive but dying in first month have hospital care. Thus on the supposition being granted that hospital care presupposes good nursing and careful observation of the child born alive, we are again led to the conclusion that prenatal observation on the part of the patient and the physician is as yet inadequate to sufficiently protect human reproduction.

Number of the child. Table 5.

The effect on infant mortality of whether the child was a first or later child was then worked out:—1st child, 40.62%; 2nd child, 19.41%; 3rd child, 9.89%; 4th child is over—21.55%.

Table 6.

Under the heads as given by the Children's Bureau—

A. Of the still-born.

Note: 1. That 10% of the still-born cases were due to toxaemia, flu and eclampsia.

2. That injuries at birth give 9%.

3. That the 5th reason, prematurity and debility, is vague and probably many of these cases better clasified would come under 4th—syphilis.

4. That 42% of the cases of still-born children no cause or age is given.

Table 6. B. Dying in 1st and 2nd week.

Note: 1. 30% due to congenital defects in infants.

2. 7% to injuries at birth, this added to 9% of still-born.

3. 5% follow toxaemia of mother, flu and eclampsia.

4. Prematurity and debility, 41.10%. Again the same comment in regard to syphilis is due.

A comment on 0.45% of unknown cause shows how much more accurate diagnosis of cause of death and contributing cause of death is made on a certificate of death belonging to a child who has lived than in the certificate signed for a still-born child.

Table 6. D. Babies dying between the 2nd and 12th month. Gastro-intestinal, 27%; respiratory (two flu epidemics), 39%; other causes, 32%; unknown causes, 2%.

These tables show clearly where the stress must be placed to reduce infant mortality.

1. The same insistence *must be given* by state and county and city departments of vital statistics on causes of death actual and contributing in still-born as is given to the child born alive.

2. In view of the fact that syphilis is the contributing or actual cause of many still-born and premature and delilitated infants, and in view of the fact that our government is asked to spend millions, our state its thousands, and at 24 centers in California municipal, state-subsidized clinics are seeking to control the ravages of syphilis, we would suggest that the birth certificates be studied and at least that parents should be educated to understand the causal relation between death of the unborn or new born and parental syphilis. With the state offering free Wassermann tests and our larger cities doing the same, there is no financial obstacle to this study.

3. Infant hygiene has taught the value of maternal feeding, clean milk, etc.—but do we teach either enough? A death rate of 28% of total 100% from gastro-intestinal diseases between 2 and 12 months against 0 where bottle babies have been carefully supervised, shows we are not doing enough, even on that line. The Children's Health Center of the Association of Colegiate Alumnae has never lost a gastro-intestinal case in all its foundling babies.

4. Again, injuries at birth causing 9% of 354 still-births and 7% of 219 children dying under 2 weeks of age with 50% of each group reported as being confined in hospitals, makes a medical mind stop and question. With all the help and convenience and technique controlling the risk of sepsis, are we tending to make surgical interference safer for the mother perhaps, but a jeopardy for the child because more readily undertaken by the obstetrician?

And in conclusion, is not the call to each one of us, social workers, public health nurses, heads of institutions, physicians with a social and public health viewpoint, to care more *intensively* for the

health of the race, its mothers and the babies, if we would have less sacrifice of the health and happiness of both? Better chance for prenatal care; literature put into the mother's hands; the public health nurse teaching her; the prenatal conference at every Children's Health Center, and prenatal clinics at every hospital which cares for confinement cases, can be easily carried out. A mother should look out on a world proud of what she is contributing to it, and anxious for perfect stock. And in recounting her experiences she should be able to say, "I had so many children and raised them." The City of San Francisco in 1919, excluding still-born registered births, barely replaced its deaths—8375 deaths and 8400 births—so 25 new souls were added by natural law to the population.

There must be a solution if true social service is done, leading through education, better health and better housing to its attainment, and every social agency has a part in the education which will have to precede a further reduction of Infant Mortality.

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THE TREATMENT OF INDUSTRIAL DISABILITIES INVOLVING THE SPINAL COLUMN.*

By HARRY LESLIE LANGNECKER, M. D.,
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One needs only study the reports issued by the State Industrial Accident Commission since the year 1913, to realize that injuries to the trunk—and most of these involve the spinal column—rate third in numerical grouping after injuries to the upper extremities and injuries to the lower extremities respectively. Allowing due consideration for the yearly increase in numbers, from better recognition and reporting of these industrial disabilities, the fact remains that their frequency does not decrease or remain stationary.

Furthermore, from the information at hand, it would seem the period of disability from year to year, does not decrease in proportioin to the severity of the injury treated.

These facts produce economic expression in a handicap or limitation of income to the patient and thereby on his family; inefficient work production for the employer and increase in cost of insurance. Sociologically these unfavorable influences are far reaching. How many of us realize the machinery set in motion by these cases of "lame backs"? Should the employee not have the benefit of the best medical treatment when injured while at work?

The importance of immediate correct diagnosis must be emphasized. Too frequently an inaccurate or hasty examination does not reveal the real condition. When the injury is considered of minor concern, less attention is naturally given. An ambulatory state is permitted instead of definite rest of the traumatized part. Every case should be completely controlled and closely observed until, with the necessary methods, the correct diagnosis is made and indicated treatment is well established. More care in the initial consideration of these cases and better training of the physicians handling industrial injuries are essential factors in efficient and correct treatment.

When the industrial surgeon arrives at a broader and more modern view of medical management of the average large manufacturing establishment, he will more fully realize his responsible, far reaching, influential position. Upon his shoulders must rest the burden of the health of the employees. In most cases poor facilities, and thereby greater number of injuries resulting, indicate the failure of the medical advisor to do his duty. That the employer will co-operate and assist in improving the welfare of his workmen is clearly shown by the establishment of first aid stations, the employment of trained nurses, and the installation of medical equipment, et cetera. To a large extent, occupational disabling injuries involve the spinal column. Many of these disabilities are correctable. A large proportion are preventable. Many of the "low back strains," generally passed over as unimportant, are directly due to standing or sitting in faulty positions while at work. It is for the industrial surgeon to point out these faulty working methods and present preventive, or at least curative, measures for the employer's adoption.

The employer must be enlightened, the employees must be educated in preventive medical matters pertaining to their particular industry. An industrial medical atmosphere must be created and efficiently maintained. Strapping a back or applying a plaster jacket does not complete the duties of the industrial surgeon. Should the

* Read before the Forty-ninth Annual Meeting of the Medical Society of the State of California, Santa Barbara, May, 1920.